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Canadian Science Advisory Secretariat
Science Response 2017/029

Quebec Region

UPDATE OF STOCK STATUS INDICATORS FOR SCALLOP IN SUBAREA 20A IN THE MAGDALEN ISLANDS

Context

Stock assessment of scallop in Quebec inshore waters is done every three years to determine whether recent changes in the status of the resource may justify adjusting the conservation approach and management plan. The last assessment was done in the winter of 2016.

In the case of subarea 20A in the Magdalen Islands, decision rules used to calculate annual authorized fishing effort have been in place since 2010. This effort is calculated using the primary stock status indicator (average catch per unit effort, or CPUE, from logbooks) and secondary indicators of sea scallop abundance in the research survey. The CPUE was updated after the 2016 fishing season to provide Fisheries Management with information on the fishing effort for the 2017 season according to the precautionary approach guidelines.

This Science Response Report results from the Science Response Process of March 16, 2017 on the Updated indicators status of the scallop stocks in Subarea 20A in Magdalen Islands.

Background

Two scallop species are fished commercially in the Gulf of St. Lawrence, namely the sea scallop (*Placopecten magellanicus*) and the Iceland scallop (*Chlamys islandica*). These two species are present in the Magdalen Islands. A Digby dredge is used to harvest scallops near shore and catches are landed mostly as meat (muscle). Given the difficulty in visually distinguishing the meat of the two species, commercial fishing statistics are presented regardless of the species.

Area 20 in the Magdalen Islands is subdivided into five subareas: 20A, 20B, 20C, 20E and 20F (Figure 1). Since 2007, the fishing effort in subarea 20A has been controlled by a total authorized number of days at sea; in subareas 20B, 20C and 20F, it has been controlled by a fishing season. Subarea 20E is closed because it is a sea scallop refuge area. The number of days in subarea 20A can be compiled in half-days (≤ 8 hours) or full days (maximum of 16 hours), two half-days accounting for one day at sea. There are 23 scallop fishing licences in the Magdalen Islands.

In 2010, reference points were determined and guidelines were established to estimate fishing effort based on the primary stock status indicator (CPUE) and its position according to the classification zones (high, average and low CPUE). Subsequently, decision rules specify the authorized effort variations based on the results of the secondary indicators: sea scallop abundance indices obtained during the most recent Fisheries and Oceans Canada research survey.

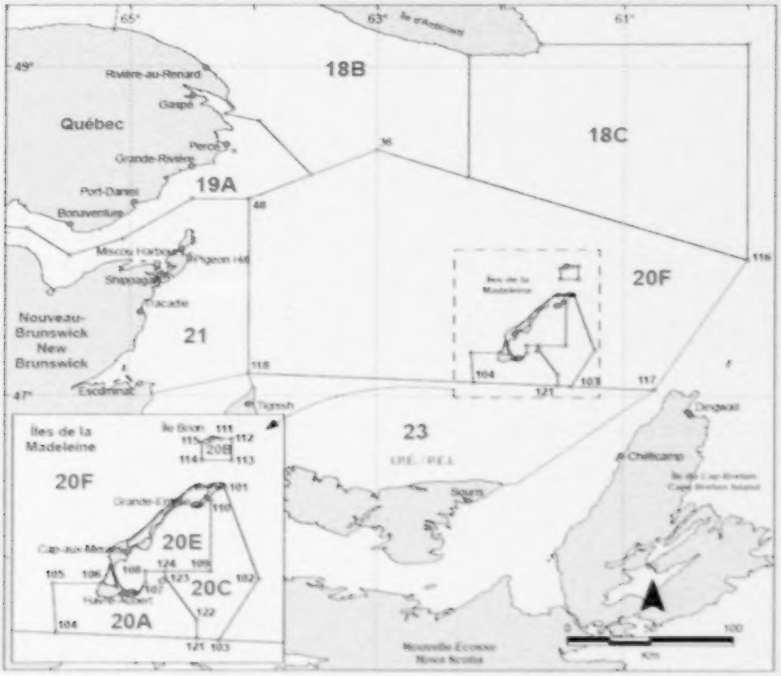

Figure 1. Scallop fishing subareas in the Magdalen Islands (20A, 20B, 20C, 20E and 20F).

The CPUE (kg/hm) for the commercial fishery in subarea 20A is calculated based on information recorded in logbooks (i.e. landings in kg of meat, fishery duration in hours, and dredge width in metres. The abundance indices come from the 2015 research survey conducted in the Magdalen Islands. The four secondary indicators chosen are relative density (number/1000 m^2) of sea scallop for the <70-mm, 70 to 84-mm, 85 to 99-mm, and ≥100-mm size classes. The reference period for calculation of the 15th, 50th and 85th percentiles of the density is from 1987 to 2008.

For 2016, the fishing effort calculated from the indicators was 329 days. However, the effort actually authorized remained the same (322 days) from 2013 to 2016 after consultation with the fishers.

Description of the Fishery

Landings were 43.1 tonnes of meat in 2015 and 2016 in all of Area 20 (Figure 2). In recent years, the majority of landings were from subarea 20A. They were 42.5 t in 2015 and 41.8 t in 2016 for a fishing effort of 300.5 days in 2015 and 308.5 days in 2016.

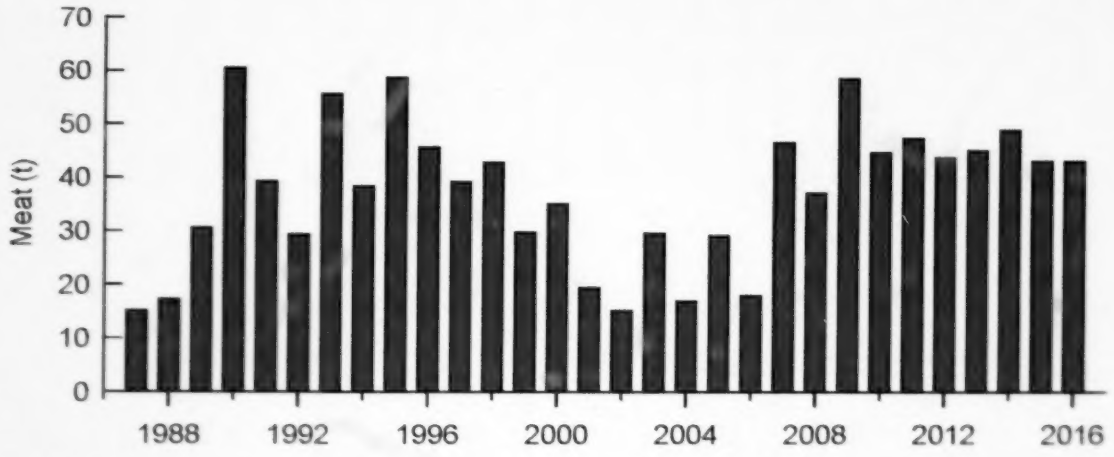

Figure 2. Scallop landings (t of meat) for all of Area 20 in the Magdalen Islands.

Analysis and Response

Stock Status Indicators

The CPUE was 1.31 kg/hm in 2015 and 1.28 kg/hm in 2016. These values are below the upper reference level (Figure 3). According to the 2015 research survey, sea scallop abundance was 9.40/1000 m^2 for the ≥100-mm size class, 3.86/1000 m^2 for the 85 to 99-mm class, 6.32/1000 m^2 for the 70 to 84-mm class, and 8.79/1000 $m^2$for the <70-mm class. The relative density of the first three size classes is above their 85th percentile, while the <70-mm class is between the 50th and 85th percentile (Figure 4).

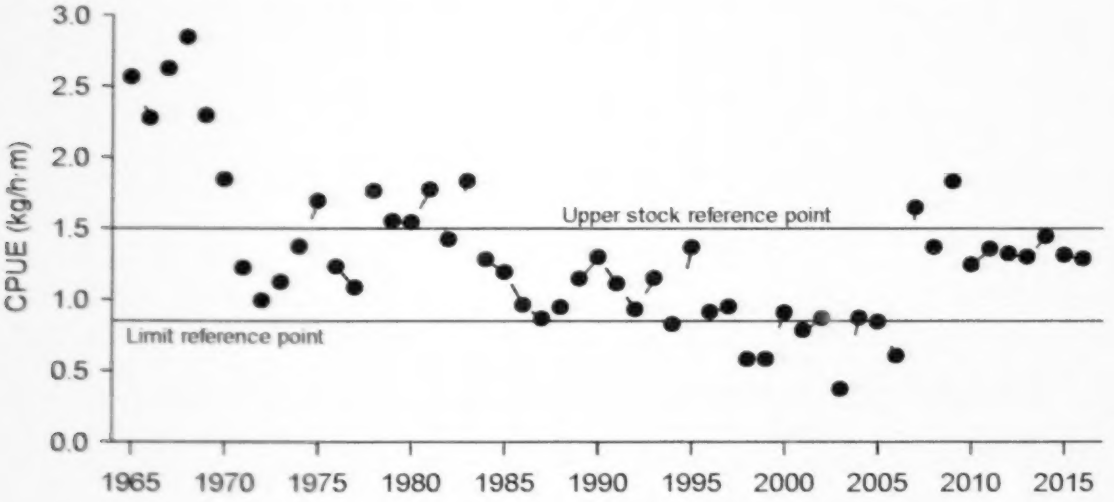

Figure 3. Annual catch per unit effort (CPUE) estimated from logbooks, subarea 20A.

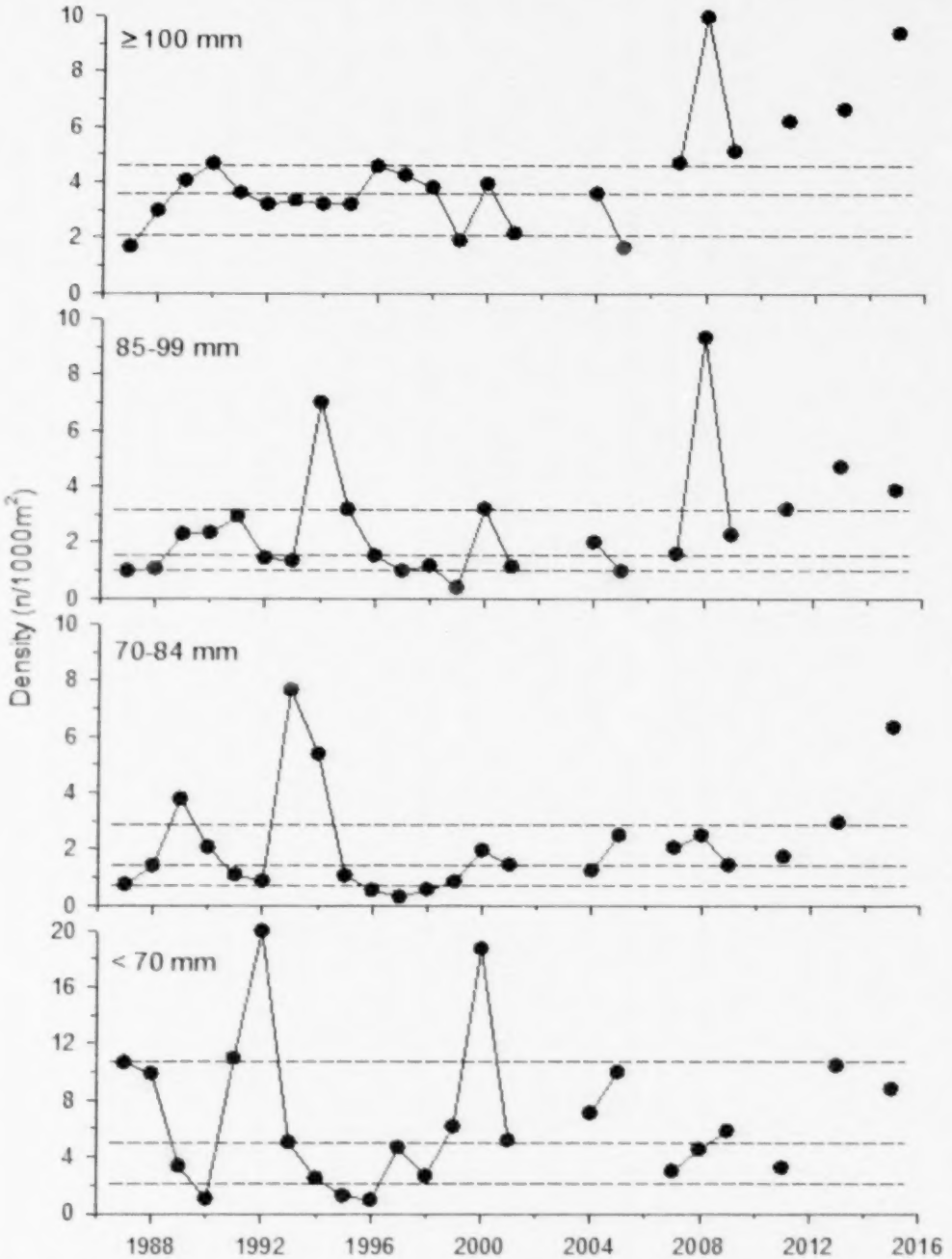

Figure 4. Annual relative density, by size class, of sea scallops sampled in subarea 20A during research surveys. The vertical lines represent the 15th, 50th and 85th percentiles of the 1987–2008 series.

Conclusions

The update of the primary indicator and landings shows stable resource status. The 2016 CPUE is in the "average CPUE" classification zone (Figure 5). Projected fishing effort according to the primary indicator is 330 days. The adjustment calculated from the secondary indicators is 0% for the ≥100-mm, 85 to 99-mm and 70 to 84-mm size classes and 10% for the <70-mm class according to the decision rules. The average adjustment calculated shows a 2.5% decline in fishing effort. The maximum fishing effort for 2017 would therefore be 322 days at sea in subarea 20A. Fisheries Management will determine the 2017 authorized fishing effort from this value by following the decision rules.

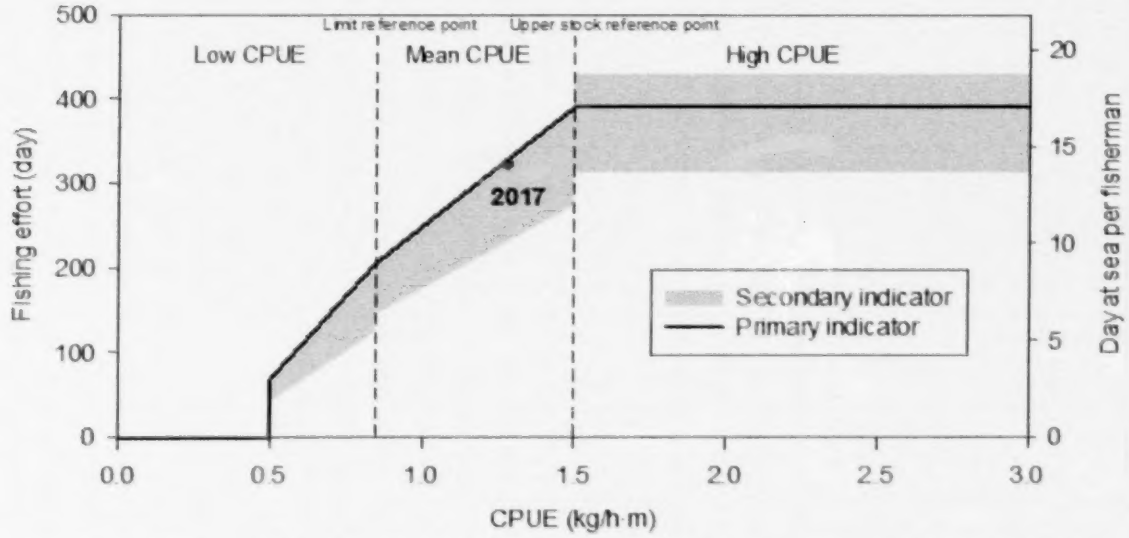

Figure 5. Calculation of fishing effort (days at sea) based on primary (CPUE) and secondary indicators (research survey indices) for subarea 20A.

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Sources of Information

This Science Response Report results from the Science Response Process of March 16, 2017, on Updated indicators status of the scallop stocks in Subarea 20A in Magdalen Islands.

DFO. 2016. 2015 Stock Assessment of Scallop in Quebec Inshore Waters. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2016/027.

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